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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/933,364	08/20/2001	Paul H. Gailus	CM04766H	7135
22917	7590	10/20/2005	EXAMINER	
MOTOROLA, INC. 1303 EAST ALGONQUIN ROAD IL01/3RD SCHAUMBURG, IL 60196			HASHEM, LISA	
			ART UNIT	PAPER NUMBER
			2645	

DATE MAILED: 10/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/933,364

Applicant(s)

GAILUS ET AL.

Examiner

Lisa Hashem

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 2, 4-20 and 22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2, 4-20, and 22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 2, 4-6, 8-11, 18, 19, and 20 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by U.S. Patent No. 5,287,556 by Cahill.

Regarding claim 1, Cahill discloses in an electrical device (see Fig. 1) having a variable output (col. 2, line 32 – col. 3, line 4), a feedback loop for adjusting the variable output, the feedback loop having a characteristic bandwidth (col. 4, lines 17-54; Fig. 1; Fig. 4) and comprising:

at least one adjustable zero element and at least one adjustable pole element (col. 3, lines 5-30); whereby the at least one adjustable zero element and at least one adjustable pole element are operable to change the characteristic bandwidth of the feedback loop (col. 3, lines 20-50).

Regarding claim 2, the feedback loop of claim 1, wherein Cahill further discloses the adjustable zero element is in a forward path of the feedback loop (Fig. 1: 113, 115; col. 3, lines 20-50).

Regarding claim 4, the feedback loop of claim 1, wherein Cahill further discloses the at least one adjustable pole element is in a forward path of the feedback loop (Fig. 1: 113, 115; col. 3, lines 20-50).

Regarding claim 5, the feedback loop of claim 4, wherein Cahill further discloses the at least one adjustable zero element is in the forward path of the feedback loop and further comprising: a mixer in the forward path of the feedback loop (Fig. 1: 105 or 107); and a mixer in the reverse path of the feedback loop (Fig. 4, 410).

Regarding claim 6, the feedback loop of claim 5, wherein Cahill further discloses: a power amplifier (Fig. 1, 103) in the forward path so that the feedback loop can be used as part of a radio transmitter (col. 1, lines 14-19; col. 3, lines 5-13).

Regarding claim 8, the feedback loop of claim 1, wherein Cahill further discloses the adjustable pole element is a circuit comprising a plurality of elements having impedance that can be selectively coupled to other elements of the circuit (col. 3, lines 5-50; Figs. 2A and 2B).

Regarding claim 9, the feedback loop of claim 1, wherein Cahill further discloses the at least one adjustable pole element and the at least one adjustable zero element are substantially contained within an integrated circuit (col. 3, lines 5-50; Figs. 2A and 2B).

Regarding claim 10, the feedback loop of claim 1, wherein Cahill further discloses the adjustable pole element is in the forward path of the feedback loop (Fig. 1: 113 or 115; col. 3, lines 5-50).

Regarding claim 11, the feedback loop of claim 1, wherein Cahill further discloses the at least one adjustable pole element comprises two adjustable pole elements (col. 3, lines 20-30).

Regarding claim 18, Cahill discloses an integrated circuit implementing substantially all the components of a feedback loop with adjustable frequency response, the integrated circuit (see Abstract; Fig. 1, Fig. 4; col. 2, line 32 – col. 3, line 4) comprising:

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at least one adjustable pole element (Fig. 1: 113 or 115) for implementing an adjustable pole in the forward path of the feedback loop (col. 3, lines 5-50).

Regarding claim 19, the integrated circuit of claim 18, wherein Cahill further discloses at least one adjustable zero element (Fig. 1: 113 or 115) for implementing an adjustable zero in the forward path of the feedback loop (col. 3, lines 5-50).

Regarding claim 20, Cahill discloses a feedback loop having a forward path and a feedback path (Fig. 1; Fig. 4) comprising:

at least one adjustable pole element in the forward path of the feedback loop (Fig. 1: 113 or 115; col. 3, lines 5-50);

at least one adjustable zero element in the forward path of the feedback loop (Fig. 1: 113 or 115; col. 3, lines 5-50);

a power amplifier in the forward path of the feedback loop (Fig. 1, 103);

a first mixer in the forward path of the feedback loop (Fig. 1: 105 or 107); and

a second mixer in the feedback path of the feedback loop (Fig. 4, 410).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 7 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cahill, as applied to claim 1 above, and in further view of U.S. Patent No. 5,467,055 by Wray et al, hereinafter Wray.

Regarding claim 7, the feedback loop of claim 3, wherein Cahill does not disclose the feedback loop is a Cartesian feedback loop (Fig. 4).

Wray discloses a Cartesian feedback loop wherein an amplifier circuit has an amplifier control loop and a loop closing element for selectively opening and closing the control loop in response to a loop closing signal (see Abstract; Fig. 1; Fig. 2; col. 2, line 50 – col. 3, line 20).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the feedback loop of Cahill to include the feedback loop is a Cartesian feedback loop as taught by Wray. One of ordinary skill in the art would have been lead to make such a modification since a Cartesian feedback loop is one method for linearizing the output of a power amplifier.

Regarding claim 12, the feedback loop of claim 1, wherein Cahill further discloses in which the adjustable zero element comprises: a first amplifier that amplifies an input signal to create a first amplified signal; and a second amplifier that amplifies the input signal to create a second amplified signal (see Fig. 2A). Wherein the feedback loop comprises an adjustable amplifier (Fig. 1, 103) and low pass filter (Fig. 1: 113 or 115).

Cahill does not disclose the adjustable zero element comprises a first adjustable amplifier, a low pass filter, and a summer to create an output signal.

Wray discloses in a feedback loop having a loop and a closed loop frequency response (see Abstract; Fig. 2), the closed loop frequency response being characterized by a closed loop bandwidth (col. 2, lines 46-56), a method comprising steps of: having a larger gain (Fig. 2, 102) in the loop frequency response yielding a change in the closed loop frequency response (col. 3, lines 21-63). Wherein Wray further discloses an adjustable first amplifier (Fig. 2, 105) that

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amplifies an input signal to create a first amplified signal; a second amplifier (Fig. 2, 20) that amplifies the input signal to create a second amplified signal; a low pass filter (Fig. 2, 106) that operates on the first amplified signal to create a filtered amplified signal; and a summer (Fig. 2, 103) to add the filtered amplified signal and the second amplified signal to create an output signal (col. 3, lines 21-40).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the adjustable zero element of Cahill to include the following elements: an adjustable first amplifier, a second amplifier, a low pass filter, and a summer as taught by Wray to be included in the adjustable zero element to provide an output. One of ordinary skill in the art would have been lead to make such a modification since the above elements of Wray can be included in the adjustable zero element in the feedback loop to provide a linearized output.

5. Claims 13-17 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wray in view of Cahill.

Regarding claim 13, Wray discloses in a feedback loop having a loop and a closed loop frequency response (see Abstract; Fig. 2), the closed loop frequency response being characterized by a closed loop bandwidth (col. 2, lines 46-56), a method comprising steps of: having a larger gain (Fig. 2, 102) in the loop frequency response yielding a change in the closed loop frequency response (col. 3, lines 21-63).

Wray does not disclose the loop frequency response having at least one pole.

Cahill discloses in an electrical device (see Fig. 1) having a

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variable output (col. 2, line 32 – col. 3, line 4), a feedback loop for adjusting the variable output, the feedback loop having a characteristic bandwidth (col. 4, lines 17-54; Fig. 1; Fig. 4) and comprising:

at least one adjustable zero element and at least one adjustable pole element (col. 3, lines 5-30);

whereby the at least one adjustable zero element and at least one adjustable pole element are operable to change the characteristic bandwidth of the feedback loop (col. 3, lines 20-50).

Wherein, the moving of the locations of the pole and zero elements can change the noise performance of the loop (col. 1, lines 41-50; col. 2, line 32 – col. 3, line 4).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the feedback loop of Wray to include an adjustable pole element as taught by Cahill. One of ordinary skill in the art would have been lead to make such a modification since an movable pole element can introduce a low frequency dominant pole and be moved to a different location to yield a change in the closed loop frequency response.

Regarding claim 14, the method of claim 13, wherein Wray in view of Cahill further disclose the step of moving a pole is accomplished by switching among a plurality of elements having different impedances (Wray: col. 3, lines 21-63).

Regarding claim 15, the method of claim 13, wherein Wray in view of Cahill further disclose the step of: moving a zero in the loop frequency response yielding a change in the closed loop frequency response (Cahill: col. 3, lines 5-50; Fig. 3).

Regarding claim 16, the method of claim 15, wherein Wray in view of Cahill further disclose the step of moving a zero is accomplished by adjusting an amplifier with an adjustable gain (Wray: Fig. 2, 102; col. 3, lines 21-40).

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Regarding claim 17, the method of claim 13, wherein Wray in view of Cahill further disclose the feedback loop contains a power amplifier for amplifying a signal so that it can be transmitted over a radio channel (Wray: Fig. 2, 10; col. 3, lines 21-40).

Regarding claim 22, please see the rejections to claims 13 and 15 above, to reject the feedback loop in claim 22.

Response to Arguments

6. Applicant's arguments, see Amendment, filed 5-25-05, with respect to the rejection(s) of claim(s) 1-22 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made. Please see all rejection(s) above.

7. Accordingly, this action is **NON-FINAL**.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- U.S. Patent Application Publication No. 2004/0100330 by Chandler discloses a radio frequency feedback amplifier circuit

9. Any response to this action should be mailed to:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Or faxed to:

(571) 273-8300 (for formal communications intended for entry)

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Or call:

(571) 272-2600 (for customer service assistance)

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lisa Hashem whose telephone number is (571) 272-7542. The examiner can normally be reached on M-F 8:30-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Fan Tsang can be reached on (571) 272-7547. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-2600.

11. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LH

lh

October 17, 2005


FAN TSANG
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600